CONTENTS OF VOLUME TWELVE

★

NUMBER 1. *Recent Research on Vitamins*

Scientific Editor: B. S. PLATT

		PAGE
INTRODUCTION	*Sir Rudolph Peters*	1
Edward Mellanby	*Sir Charles Harington*	3
The work of the Accessory Food Factors Committee	*Dame Harriette Chick & Margaret Hume*	5
Vitamins and the protection of the liver	*C. H. Best, C. C. Lucas & Jessie H. Ridout*	9
Recent work on B vitamins in the blood and gastro-intestinal tract, especially in relation to human diseases	*L. J. Witts*	14
Vitamins and the nervous system	*H. M. Sinclair*	18
Vitamins and the skin	*H. M. Sinclair*	24
Recent work on vitamins: bones	*W. I. M. Holman & R. A. McCance*	27
Vitamin deficiency and vision	*Antoinette Pirie*	32
Effect of excess vitamin A on organized tissues cultivated in vitro	*Honor B. Fell*	35
Carotenoids and vitamin A	*R. A. Morton & T. W. Goodwin*	37
Vitamin E	*T. Moore*	44
Interrelationships of tryptophan, nicotinic acid and other B vitamins	*C. E. Dalgliesh*	49
Vitamin B_{12}	*E. Lester Smith*	52
Vitamin C	*Leslie J. Harris*	57
Vitamins in animal nutrition	*M. E. Coates, S. K. Kon & J. W. G. Porter*	61
Antivitamins, antimetabolites and chemotherapy	*Adrien Albert*	67
Effect of processing on the vitamin content of foods	*L. W. Mapson*	73
Vitamins in nutrition: orientations and perspectives	*B. S. Platt*	78
Book Reviews		89

★

NUMBER 2. *Neuro-Otology*

Scientific Editor: C. S. HALLPIKE

INTRODUCTION	*Sir Bryan Matthews*	91
Notes on the technique of temporal bone microtomy	*C. Best, S. Fordham, C. S. Hallpike, M. Riddihough, E. H. J. Schuster & J. E. Sears*	93
Formation, circulation and chemical properties of the labyrinthine fluids	*L. Citron, D. Exley & C. S. Hallpike*	101
Electrophysiology of the central auditory pathway	*I. C. Whitfield*	105
Comparative physiology of the otolith organs	*Otto Lowenstein*	110
Peripheral mechanisms of equilibrium	*Otto Lowenstein*	114
Loudness recruitment	*M. R. Dix*	119
Fatigue and adaptation of hearing	*J. D. Hood*	125
The investigation of vestibular function	*Terence Cawthorne, M. R. Dix, C. S. Hallpike & J. D. Hood*	131
The contribution of surgery to the problems of neuro-otology	*Terence Cawthorne*	143
Pathology, symptomatology and diagnosis of organic affections of the eighth nerve system	*E. A. Carmichael, M. R. Dix & C. S. Hallpike*	146
Hereditary lesions of the labyrinth in the mouse	*Hans Grüneberg*	153

CONTENTS OF VOLUME TWELVE

★

NUMBER 1. *Recent Research on Vitamins*

Scientific Editor: B. S. PLATT

		PAGE
INTRODUCTION	*Sir Rudolph Peters*	1
Edward Mellanby	*Sir Charles Harington*	3
The work of the Accessory Food Factors Committee	*Dame Harriette Chick & Margaret Hume*	5
Vitamins and the protection of the liver	*C. H. Best, C. C. Lucas & Jessie H. Ridout*	9
Recent work on B vitamins in the blood and gastro-intestinal tract, especially in relation to human diseases	*L. J. Witts*	14
Vitamins and the nervous system	*H. M. Sinclair*	18
Vitamins and the skin	*H. M. Sinclair*	24
Recent work on vitamins: bones	*W. I. M. Holman & R. A. McCance*	27
Vitamin deficiency and vision	*Antoinette Pirie*	32
Effect of excess vitamin A on organized tissues cultivated in vitro	*Honor B. Fell*	35
Carotenoids and vitamin A	*R. A. Morton & T. W. Goodwin*	37
Vitamin E	*T. Moore*	44
Interrelationships of tryptophan, nicotinic acid and other B vitamins	*C. E. Dalgliesh*	49
Vitamin B_{12}	*E. Lester Smith*	52
Vitamin C	*Leslie J. Harris*	57
Vitamins in animal nutrition	*M. E. Coates, S. K. Kon & J. W. G. Porter*	61
Antivitamins, antimetabolites and chemotherapy	*Adrien Albert*	67
Effect of processing on the vitamin content of foods	*L. W. Mapson*	73
Vitamins in nutrition: orientations and perspectives	*B. S. Platt*	78
Book Reviews		89

★

NUMBER 2. *Neuro-Otology*

Scientific Editor: C. S. HALLPIKE

INTRODUCTION	*Sir Bryan Matthews*	91
Notes on the technique of temporal bone microtomy	*C. Best, S. Fordham, C. S. Hallpike, M. Riddihough, E. H. J. Schuster & J. E. Sears*	93
Formation, circulation and chemical properties of the labyrinthine fluids	*L. Citron, D. Exley & C. S. Hallpike*	101
Electrophysiology of the central auditory pathway	*I. C. Whitfield*	105
Comparative physiology of the otolith organs	*Otto Lowenstein*	110
Peripheral mechanisms of equilibrium	*Otto Lowenstein*	114
Loudness recruitment	*M. R. Dix*	119
Fatigue and adaptation of hearing	*J. D. Hood*	125
The investigation of vestibular function	*Terence Cawthorne, M. R. Dix, C. S. Hallpike & J. D. Hood*	131
The contribution of surgery to the problems of neuro-otology	*Terence Cawthorne*	143
Pathology, symptomatology and diagnosis of organic affections of the eighth nerve system	*E. A. Carmichael, M. R. Dix & C. S. Hallpike*	146
Hereditary lesions of the labyrinth in the mouse	*Hans Grüneberg*	153

NUMBER 3. *Physiology of Voluntary Muscle*

Scientific Editor: W. D. M. PATON

		PAGE
INTRODUCTION	*Sir Rudolph Peters*	161
The design of muscles	*A. V. Hill*	165
Interpretation of muscle striation: evidence from visible light microscopy	*A. F. Huxley*	167
The ultra-structure of striated muscle	*H. E. Huxley*	171
The thermodynamics of muscle	*A. V. Hill*	174
The mechanical properties of muscle	*D. R. Wilkie*	177
Muscle proteins	*Kenneth Bailey*	183
Interactions of actomyosin and adenosinetriphosphate	*S. V. Perry*	188
Energy production in muscle	*D. M. Needham*	194
Comparative physiology of muscle	*C. F. A. Pantin*	199
Muscular activity during locomotion	*James Gray*	203
The role of the cell membrane in muscular activity	*B. Katz*	210
Nervous gradation of muscular contraction	*P. H. Hammond, P. A. Merton & G. G. Sutton*	214
Problems of muscular fatigue	*P. A. Merton*	219
Muscular effort	*R. G. Bannister*	222
Familial periodic paralysis	*B. McArdle*	226
Changes in muscle after death	*E. C. Bate-Smith & J. R. Bendall*	230
Book Reviews		236

INDEX TO VOLUME TWELVE

Names printed in large capitals are those of authors who have contributed articles to the symposia. Titles of books are printed in italics. Titles of symposia are printed in bold type.

A

Accessory Food Factors Committee, origin and work of, 5
Acetylcholine, release in muscular activity, 211
Actin, 184, 185
—— extraction from muscle, 171
Actomyosin, enzymic activity, 189
—— interaction with adenosinetriphosphate, 188
—— systems, 189
Adenosinetriphosphate and muscle contraction, 195
—— interaction with actomyosin, 188
—— oxidative re-synthesis, 196
Adrenal function, relation to vitamin C, 59
ALBERT, A.: Antivitamins, antimetabolites and chemotherapy, 67
Amblyopia, nutritional, tropical, 33
Anoxia, effect of vitamin E on, 46
Antimetabolites and chemotherapy, 70
Antivitamins, 67
Auditory pathway, electrophysiology, 105

B

BAILEY, K.: Muscle proteins, 183
BANNISTER, R. G.: Muscular effort, 222
BATE-SMITH, E. C. & BENDALL, J. R.: Changes in muscle after death, 230
BENDALL, J. R., *see* BATE-SMITH, E. C., 230
BEST, C., FORDHAM, S., HALLPIKE, C. S., RIDDIHOUGH, M., SCHUSTER, E. H. J. & SEARS, J. E.: Notes on the technique of temporal bone microtomy, 93
BEST, C. H., LUCAS, C. C. & RIDOUT, J. H.: Vitamins and the protection of the liver, 9
Biographical notes on contributors, 87, 158, 163
Biotin deficiency, neurological effects, 22
Blood, B vitamins in, 14
Bones, effects of excessive vitamin intake, 27, 29
—— —— —— vitamin deficiency, 27, 28, 29
Book reviews, 89, 236
BRASH, J. C.: *Neuro-vascular hila of limb muscles*, 236
Bread, composition in wartime, 7
—— *Studies on nutritive value of bread and effect of variations in the extraction rate of flour on the growth of undernourished children*, 89

C

Caloric tests of vestibular function, 132
CARMICHAEL, E. A., DIX, M. R. & HALLPIKE, C. S.: Pathology, symptomatology and diagnosis of organic affections of the eighth nerve system, 146
Carotene, conversion to vitamin A, 39
Carotenoids, 37
CAWTHORNE, T.: The contribution of surgery to the problems of neuro-otology, 143
—— DIX, M. R., HALLPIKE, C. S. & HOOD, J. D.: The investigation of vestibular function, 131
Cell membrane, role in muscular activity, 210
CHICK, Dame H. & HUME, M.: The work of the Accessory Food Factors Committee, 5
Choline deficiency, hepatic effects, 9
—— pharmacology, 12
CITRON, L., EXLEY, D. & HALLPIKE, C. S.: Formation, circulation and chemical properties of the labyrinthine fluids, 101
COATES, M. E., KON, S. K. & PORTER, J. W. G.: Vitamins in animal nutrition, 61
Cochlea, function in cerebral disease, 150
Contributors, biographical notes on, 87, 158, 163
Creatine phosphate and muscle contraction, 194

D

DALGLIESH, C. E.: Interrelationships of tryptophan, nicotinic acid and other B vitamins, 49
DIX, M. R.: Loudness recruitment, 119
—— *see* CARMICHAEL, E. A., 146
—— *see* CAWTHORNE, T., 131

E

Effort, muscular, 222
Eggs, processing, effect on vitamin content, 75
Eighth nerve affections, pathology, symptomatology and diagnosis, 146
End-plate reaction, 212
Equilibrium, peripheral mechanisms of, 114
Exercise, ventilation rise in, 223
EXLEY, D., *see* CITRON, L., 101

F

Fatigue, hearing adaptation in, 125
—— muscular, site and nature, 219
—— of skilled movements, 220
FELL, H. B.: Effect of excess vitamin A on organized tissues cultivated in vitro, 35
Fenestration operations, 144
Fish, processing, effect on vitamin content, 74
Folic acid, recent research, 15
Food, fortification, 82
—— processing, effect on vitamin content, 73, 82
FORDHAM, S., *see* BEST, C., 93

G

Gastrointestinal tract, B vitamins in, 14
Goitre, prophylaxis, 8
GOODWIN, T. W., *see* MORTON, R. A., 37
GRAY, J.: Muscular activity during locomotion, 203
Growth factors, 62
GRÜNEBERG, H.: Hereditary lesions of the labyrinth in the mouse, 153

H

Haemorrhagic syndrome in poultry, 63
HALLPIKE, C. S., *see* BEST, C., 93
—— *see* CARMICHAEL, E. A., 146
—— *see* CAWTHORNE, T., 131
—— *see* CITRON, L., 101
HAMMOND, P. H., MERTON, P. A. & SUTTON, G. G.: Nervous gradation of muscular contraction, 214
HARINGTON, Sir C.: Edward Mellanby: a memoir, 3
HARRIS, L. J.: Vitamin C, 57
—— *Vitamins in theory and practice*, 4th ed., 90
Hearing, adaptation to fatigue, 125
—— electrophysiology, 105
Heart output, increase during exercise, 224
HILL, A. V.: Design of muscles, 165
—— Thermodynamics of muscle, 174
HOLMAN, W. I. M. & McCANCE, R. A.: Recent work on vitamins: bones, 27
HOOD, J. D.: Fatigue and adaptation of hearing, 125
—— *see* CAWTHORNE, T. E., 131
HUME, M., *see* CHICK, Dame H., 5
HUXLEY, A. F.: Interpretation of muscle striation: evidence from visible light microscopy, 167
HUXLEY, H. E.: Ultra-structure of striated muscle, 171
Hyperkeratosis, 64
Hyperoxia, effect of vitamin E on, 46

J

JELLIFFE, D. B.: *Infant nutrition in the subtropics and tropics*, 89

K

KATZ, B.: Role of the cell membrane in muscular activity, 210
Keratoconjunctivitis, malnutritional, 33
KON, S. K., *see* COATES, M. E., 61

L

Labyrinth as organ of equilibrium, 114
—— disorders: pathology, symptomatology and diagnosis, 146
—— hereditary lesions in mouse, 153
Labyrinthectomy, unilateral, effect on labyrinthine function, 143
Labyrinthine fluids: formation, circulation and chemical properties, 101
—— sense endings, mode of function, 114
Lactic acid and muscle contraction, 194
Lagena, function, oscillographic analysis of, 113
Liver, effect of vitamin deficiency, 9
Locomotion, muscular activity during, 203
Loudness recruitment, 119
LOWENSTEIN, O.: Comparative physiology of the otolith organs, 110
—— Peripheral mechanisms of equilibrium, 114
LUCAS, C. C., *see* BEST, C. H., 9

M

McARDLE, B.: Familial periodic paralysis, 226
McCANCE, R. A., *see* HOLMAN, W. I. M., 27
—— *see* WIDDOWSON, E. M., 89
MAPSON, L. W.: Effect of processing on the vitamin content of foods, 73
MARTINDALE, W.: *Extra pharmacopoeia*, 23rd ed., vol. II, 90
MATTHEWS, Sir B.: Neuro-otology: introduction to symposium, 91
Meat, processing, effect on vitamin content, 74
Mellanby, Sir Edward, memoir on, 3
Ménière's disease: pathology, symptomatology and diagnosis, 146
—— —— surgical treatment, 143
MERTON, P. A.: Problems of muscular fatigue, 219
—— *see* HAMMOND, P. H., 214
Microtome for temporal bone microtomy, 93
Milk, processing, effect on vitamin content, 75
—— substitutes, 8
MOORE, T.: Vitamin E, 44
MORTON, R. A. & GOODWIN, T. W.: Carotenoids and vitamin A, 37
MOSELEY, H. F.: *Atlas of musculoskeletal exposures*, 236
Movement, muscular activity during, 203
Muscle, activity during locomotion, 203
—— —— role of cell membrane, 210
—— changes after death, 230
—— contraction, isometric, 177
—— —— isotonic, 178
—— —— nervous gradation of, 214
—— design, 165
—— energy production, 194
—— fatigue, site and nature of, 219
—— heat production, 174
—— " length servo ", 214
—— mechanical properties, 177
—— *Neuro-vascular hila of limb muscles*, 236
—— physiology, comparative, 199
—— proteins, 183
—— —— extraction, 171, 183
—— —— interaction, 186, 188
—— speed, 165
—— spindles, in eye muscles, 218
—— stretch-reflex, 214
—— striated, ultra-structure of, 171
—— striation, interpretation from visible light microscopy, 167
—— thermodynamics, 174
—— **voluntary, physiology of, symposium on, 161–235**
Muscular effort, 222
Myosin, 184
—— extraction from muscle, 171

N

NEEDHAM, D. M.: Energy production in muscle, 194
Nervous system, effect of vitamin deficiencies on, 19
—— —— function of vitamins in, 18
Neurones, metabolism, 18
Neuro-otology, surgical contribution to, 143
—— **symposium on, 91–157**
Nicotinic acid deficiency, dermatological effects, 25
—— —— —— neurological effects, 22
—— —— interrelationship with tryptophan, 49
—— —— recent research, 14
Nutrition: *Infant nutrition in the subtropics and tropics*, 89
—— role of vitamins, 78
—— surveys, 82
—— *World population and resources*, 89
Nystagmus, tests for, 131, 141

O

Otolith function, classical theory of, 110
—— —— oscillographic analysis of, 110
—— —— positional tests, 140
Oxygen supply, inadequate or excessive, effect of vitamin E on, 46
—— transfer in lung during exercise, 224

P

PANTIN, C. F. A.: Comparative physiology of muscle, 199
Pantothenic acid deficiency, neurological effects, 20
Paralysis, periodic, familial, clinical features and causation, 226
—— —— —— serum potassium in, 226
PEP (POLITICAL AND ECONOMIC PLANNING): *World population and resources: a report by PEP*, 89
PERRY, S. V.: Interactions of actomyosin and adenosinetriphosphate, 188
PETERS, Sir R.: Recent research on vitamins: introduction to symposium, 1
—— Physiology of voluntary muscle: introduction to symposium, 161
PHARMACEUTICAL SOCIETY OF GREAT BRITAIN: *The extra pharmacopoeia* (*Martindale*), 23rd ed., vol. II, 90
Pharmacopoeias: *Extra pharmacopoeia*, 23rd ed., vol. II, 90
—— *Pharmacopoea internationalis*, vol. II, 90
PIRIE, A.: Vitamin deficiency and vision, 32
PLATT, B. S.: Vitamins in nutrition: orientations and perspectives, 78
PORTER, J. W. G., *see* COATES, M. E., 61
Prematurity, value of vitamin E in, 46
Proteins of muscle, 183
Pyridoxine, *see* Vitamin B_6

R

Riboflavin deficiency, dermatological effects, 25
—— —— effect on vision, 33
—— —— neurological effects, 22
RIDDIHOUGH, M., *see* BEST, C., 93
RIDOUT, J. H., *see* BEST, C. H., 9
Rigor mortis, chemical changes in muscle during, 232
—— —— physical changes in muscle during, 230
Running, muscular effort in, 222

S

Sacculus, function, oscillographic analysis of, 111
SCHUSTER, E. H. J., *see* BEST, C., 93
Scurvy, human and experimental, 58
SEARS, J. E., *see* BEST, C., 93
Semicircular canals, function, 115
SINCLAIR, H. M.: Vitamins and the nervous system, 18
—— Vitamins and the skin, 24
Skin, biochemistry, 24
——effects of vitamin deficiencies, 24
SMITH, E. L.: Vitamin B_{12}, 52
Surgery: *Atlas of musculoskeletal exposures*, 236
SUTTON, G. G., *see* HAMMOND, P. H., 214

T

Temporal bone microtomy, technique, 93
Thiaminases, 63
Thiamine deficiency, effect on vision, 32
—— —— neurological effects, 19
Tissue cultures, effect of vitamin A excess on, 35
Tocopherols, chemistry, 44
Tropomyosin, 184
Tryptophan, interrelationships with nicotinic acid and other B vitamins, 49
Tullio effect, 145

U

Utriculus, function, oscillographic analysis of, 111

V

Vegetables, processing, effect on vitamin content, 73
Vestibular function, effect of cerebral disorders, 150
—— —— investigation of, 131
—— neuronitis, 148
Vision, effect of vitamin deficiency on, 32
—— role of vitamin A, 40
Vitamin A deficiency, dermatological effects, 24
—— —— —— effect on bones, 27
—— —— —— —— —— vision, 32
—— —— excess, effect on bones, 27
—— —— —— —— —— organized tissues cultured in vitro, 35
—— —— human requirements, 7
—— —— role in vision, 40
—— B, as coenzyme, 49
—— —— deficiency, dermatological effects, 25
—— —— —— effect on bones, 28
—— —— —— —— —— vision, 32
—— B_1, recent research, 14
—— B_2, recent research, 14
—— B_6, deficiency, dermatological effects, 25
—— —— —— neurological effects, 22
—— —— recent research, 14
—— B_{12}, biochemistry, 90
—— —— chemistry and biochemical functions 52
—— —— clinical use, 16
—— —— deficiency, neurological effects, 21
—— —— radioactive, 53
—— C and adrenal function, 59
—— —— biosynthesis, 58
—— —— deficiency, effect on bones, 28
—— —— estimation, methods, 57
—— —— human requirements, 7, 58
—— —— mode of action, 59
—— —— specificity, 57
—— D deficiency, effect on bones, 29
—— —— excess, effect on bones, 29
—— E, chemistry and function, 44
—— —— deficiency, effects, 47
—— —— in anoxia and hyperoxia, 46
Vitamins A, carotenoid precursors, 37
—— antagonists, 67
—— deficiencies as research tool, 51
—— effect of food processing on, 73, 82
—— fat-soluble, antagonists, 67
—— fortification of food with, 82
—— function, 83
—— in animal nutrition, 61
—— in nutrition, 78
—— in therapeutics, 81
—— **recent research, symposium on, 1–86**
—— standardization, international, 6
—— synthesis, intestinal, 61
—— *Vitamins in theory and practice*, 4th ed., 90
—— water-soluble, antagonists, 68

W

WHITFIELD, I. C.: Electrophysiology of the central auditory pathway, 105
WIDDOWSON, E. M. & McCANCE, R. A.: *Studies on the nutritive value of bread and on the effect of variations in the extraction rate of flour on the growth of undernourished children*, 89
WILKIE, D. R.: Mechanical properties of muscle, 177
WILLIAMS, R. T. (editor): *The biochemistry of vitamin B_{12}*, 90
WITTS, L. J.: Recent work on B vitamins in the blood and gastrointestinal tract, especially in relation to human diseases, 14
WORLD HEALTH ORGANIZATION: *Pharmacopoea internationalis*, vol. II, 90

X

X disease, 64

Printed in Great Britain by Spottiswoode, Ballantyne & Co. Ltd., London & Colchester